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Rolling Knolls Landfill Settling Parties

Addendum 1 to the Data Gaps Sampling and Analysis Plan

Rolling Knolls Landfill Superfund Site

Chatham, New Jersey

~~August 2015~~October 2015

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Rolling Knolls Landfill Superfund Site
Chatham, New Jersey

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Table of Contents

1. Introduction **1**

1.1 Objectives 1

1.2 Data Gaps SAP Organization 2

2. Additional Soil and Sediment Sampling **3**

2.1 Soil Sampling 3

2.1.1 Soil Sample Locations 3

2.1.2 Soil Sampling Procedures 4

2.1.3 Soil Sample Analyses 5

2.2 Sediment Sampling 6

2.2.1 Sediment Sample Locations 6

2.2.2 Sediment Sampling Procedures 6

2.2.3 Sediment Sample Analysis 7~~6~~

2.3 Analytical Procedures 7

3. Schedule **8**

4. Project Management **9**

4.1 Staffing 9

4.2 Coordination 9

5. References **10**

Tables

Table 1 Proposed Soil Sample Locations, Depths, and Analyses

Figures

Figure 1 Site Location Map

Figure 2 Site Map

Figure 3a Proposed Sampling Locations - North

Figure 3b Proposed Sampling Locations - South

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Table of Contents

Figure 4 Project Organizational Chart

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Table of Contents

Acronyms and Abbreviations

Agreement	Administrative Settlement Agreement and Order on Consent
ARCADIS	ARCADIS U.S., Inc.
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COCs	constituents of concern
CLP	Contract Laboratory Program
Data Gaps SAP	Data Gaps Sampling and Analysis Plan
GPS	global positioning satellite
GSNWR	Great Swamp National Wildlife Refuge
NJDEP	New Jersey Department of Environmental Protection
PPNDP	passively placed narrow diameter points
PCB	polychlorinated biphenyl
PID	photoionization detector
QA	quality assurance
QAPP	Quality Assurance Project Plan
SCSR	Site Characterization Summary Report
site	Rolling Knolls Landfill Superfund Site, located in Chatham Township, New Jersey
SOP	Standard Operating Procedure
SRS	Soil Remediation Standard
TestAmerica	TestAmerica Laboratories, Inc.

the Group	Chevron Environmental Management Company, Lucent Technologies Inc., (now known as Alcatel-Lucent USA Inc.) and Novartis Pharmaceuticals Corporation
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service

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1. Introduction

On behalf of Chevron Environmental Management Company for itself and on behalf of Kewanee Industries, Inc., Lucent Technologies Inc., (now known as Alcatel-Lucent USA Inc.) and Novartis Pharmaceuticals Corporation (collectively, the Group), ARCADIS U.S., Inc. (ARCADIS) prepared this Addendum 1 to the Data Gaps Sampling and Analysis Plan (Data Gaps SAP) for the Rolling Knolls Landfill Superfund Site (the "site"), located in Chatham Township, New Jersey. The location of the site is shown in Figure 1, and the site features are shown in Figure 2.

The Data Gaps SAP was submitted to USEPA on September 17, 2014 and approved by the United States Environmental Protection Agency (USEPA) on November 18, 2014 (ARCADIS 2014a). Collection and analysis of soil, sediment, and groundwater samples proposed in the Data Gaps SAP was conducted from November 2014 to July 2015. This addendum proposes additional soil and sediment sampling to delineate constituents of concern/chemicals of concern (COCs) detected in samples collected during the initial Data Gaps SAP implementation. ~~By emails dated April 6 and April 9, 2015, the USEPA's remedial project manager (RPM) indicated that seven additional soil and sediment samples would be required to complete the Data Gap sampling and that the New Jersey Department of Environmenal Protection (NJDEP) concurred with this position. On April 29, 2015, the Group submitted the Data Gaps SAP and Quality Assurance Project Plan (QAPP) addenda conforming to these requirements. On June 17, 2015, the USEPA and the NJDEP commented on the Data Gaps SAP and QAPP addenda, in part, by requiring 33 soil/sediment samples in addition to the 7 referenced in the early April email exchange. The agencies, the Group, and ARCADIS discussed these comments in a conference call on June 30, 2015. ARCADIS field verified and suggested changes to several of the proposed NJDEP sampling locations, and received comments on the suggested changes in an August 17, 2015 letter from USEPA. The sampling proposed in this Data Gaps SAP Addendum 1 is intended to comply with all requests made by the agencies in the June 17, 2015 letter, the June 30, 2015 conference call, and the August 17, 2015 letter.~~

1.1 Objectives

The objectives of the sampling proposed herein are to complete the objectives originally identified in Section 1.1 of the approved Data Gaps SAP (November 2014) and to address additional delineation concerns identified by the USEPA and NJDEP that were requested ~~(letters dated June 17, 2015 and August 17, 2015)~~ to further delineate the nature and extent of contamination at the site.

In addition, the Group is proposing additional delineation sampling to that requested by USEPA and NJDEP. This addendum contains the sampling proposed by the USEPA, NJDEP, and the Group.

1.2 Data Gaps SAP Organization

This Data Gaps SAP is organized as described below.

- Section 2, Additional Soil and Sediment Sampling, presents each new task that will be conducted as part of the Data Gaps SAP and outlines proposed technical activities that will be conducted to complete each task.
- Section 3, Schedule, presents a schedule for the Data Gaps SAP activities.
- Section 4, Project Management, introduces the project team and describes the responsibilities of each project team member.
- Section 5, References, provides references used in the development of this Addendum 1 to the Data Gaps SAP.

A QAPP, submitted on September 19, 2014 and approved by the USEPA on December 18, 2014 (ARCADIS 2014b), provides supporting information on site conditions, sampling requirements and procedures, and laboratory analytical procedures. Certain worksheets in the QAPP have been revised to accompany this addendum. These Include:

- Worksheet #14/16: Project Tasks & Schedule
- Worksheet #17: Sampling Design and Rationale
- Worksheet 18 – Sampling Locations and Methods; and
- Worksheet 20 – Field QC Summary

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These revised worksheets are submitted as Addendum 1 to the QAPP.

2. Additional Soil and Sediment Sampling

2.1 Soil Sampling

2.1.1 Soil Sample Locations

The proposed soil sampling locations are shown on Figures 3a and 3b, along with previous surface soil sample results that were used to select the proposed locations. Soil sampling locations (sample numbers SS-165 through SS-176) are located off the boundary of the landfill in native soil, near where previous soil samples contained concentrations of one or more constituents of concern (COCs) exceeding its New Jersey Soil Remediation Standard (SRS). Proposed locations are also summarized in Table 1.

In general, the topography of the site is flat, and the landfill is slightly higher than the surrounding areas. Delineation samples collected outside the boundary of the landfill, often in areas that are at times inundated, are lower than the landfill because the landfill was constructed by filling a low-lying area. Areas where constituents could flow in runoff from the landfill were targeted for sampling in previous surface water and sediment sampling. Sampling locations have been modified to ensure that sampling is conducted in a topographically low area.

~~After the discussion between the Settling Parties and the agencies on June 30, 2015, NJDEP provided information on their proposed sample locations, and ARCADIS field verified that several of these locations were in topographically lower areas. Where appropriate and approved by USEPA in their letter of August 17, 2015, modified locations will be sampled to help ensure that NJDEP's objective of sampling in a topographically low area will be met.~~

All perimeter locations are in potentially wet areas and are expected to consist of wetland soil. However, if these locations are below water at the time of collection, they will be designated sediment samples and will be collected using sediment sampling techniques (see Section 2.2). Soil sample locations SS-177 through SS-183 are located in the interior of the landfill.

The matrices at the proposed sample location were observed during a July 27, 2015 site visit conducted by ARCADIS and a representative of CDM Smith (consultant to the

USEPA). Site conditions may change in response to precipitation or other factors. As a result, samples that are anticipated to consist of soil may be inundated and considered sediment at the time of sampling, and samples that were below water at the time of the site visit may be dry and considered soil at the time of sampling. The field crew will follow the appropriate standard operating procedure (SOP) (either SOP 14 [sediment sampling], SOP 5 [drilling procedures for soil sampling], or SOP 17 [manual procedures for soil sampling]) based on the current conditions during the time of sampling.

2.1.2 Soil Sampling Procedures

ARCADIS field personnel will advance soil borings to collect soil samples using a hand-driven Macrocore®. At sample locations SS-165 through SS-176, field personnel will use hand tools (e.g., slide-hammer) to advance a 2-inch-diameter by 2-foot-long stainless steel Macrocore® fitted with a dedicated acetate liner to 2 feet below ground surface (bgs). At sample locations SS-177 through SS-183 field personnel will advance a Macrocore® using a track mounted geoprobe to a depth below the landfilled materials. A dual tube or a discrete sampler will be used below the water table to ensure a representative sample is collected. The Macrocore® cutting shoe may be equipped with a disposable, plastic basket to increase recovery of loose material. Other sampling methods (e.g., hand auger, shovel) may be used to collect soil samples if conditions at a proposed sampling location do not allow for advancement of or adequate recovery with a hand-driven Macrocore®.

After the Macrocore® is advanced to the specified depth, field personnel will carefully extract the Macrocore® from the borehole to minimize soil loss, remove the acetate liner containing the soil core from the Macrocore®, cut the acetate liner open, and photograph the soil core. Field personnel will record the length of each recovered soil core in a field log book then score the soil core at 6-inch intervals and field screen with a photoionization detector (PID). PID readings will be recorded in a field log book. If other sampling methods are required to collect soil, field personnel will attempt to remove a volume of soil approximately 1 foot long and 3 to 6 inches thick from 0.0 to 1.0 foot bgs and 1.0 to 2.0 feet bgs, while attempting to minimize soil disturbance. Field personnel will process this soil volume in the same manner as a soil core contained in a Macrocore® acetate liner, as described above.

The soil's physical characteristics and other relevant visual observations will be recorded in a field log book. When soil characterization is complete, a composite sample will be collected from the remaining soil in the soil core. At the locations off the

landfill (SS-165 through SS-176) soil samples will be collected from the 0.0 to 1.0 foot bgs and 1.0 to 2.0 foot bgs. At the locations on the landfill, soil samples will be collected from the 1-foot interval beneath the landfilled material and the 1-foot interval above the clay layer that underlies the site. The VOC fraction will be collected from the lower 6-inches within each of these intervals at sample locations where VOC analysis will be conducted.

Soil samples will be collected using decontaminated, non-dedicated stainless steel hand-tools (e.g., spoons, scoops or trowels) and bowls. Field personnel will place soil samples in laboratory-supplied containers. Field personnel will document, label, package and ship soil samples in accordance with procedures provided in Worksheet #21 of the QAPP (ARCADIS 2014b). Non-disposable sample equipment (e.g., stainless steel bowls and spoons, Macrocore®, hand-auger, shovel) will be decontaminated between uses at subsequent sampling locations in accordance with the Equipment Decontamination SOP presented in the QAPP (ARCADIS 2014b).

Field personnel will advance the Macrocore® or other hand tools until adequate sample volume is obtained or until it is determined that a soil sample cannot be collected due to lack of soil at a sampling location. Field personnel will advance the Macrocore® or other tools a maximum of four times within 5 to 10 feet of each proposed sampling location in an attempt to obtain adequate sample volume. If adequate sample volume cannot be obtained after four attempts, the sampling area will be widened until adequate sample volume has been obtained.

Some sampling will take place in potential bog turtle habitat. Field personnel conducting sampling activities in potential bog turtle habitat will implement USFWS-recommended conservation measures as described in Section 3.1.1 of the Data Gaps SAP (ARCADIS 2014a).

The horizontal and vertical locations of all soil samples will be surveyed by a New Jersey licenses land surveyor.

2.1.3 Soil Sample Analyses

Soil samples will be analyzed for the COCs outlined in Table 1. The proposed soil samples that are off the boundary of the landfill (perimeter samples) are in native soil (SS-165 through SS-176). The proposed analyses for these perimeter samples include TCL SVOCs, SVOCs by SIM, PCBs (as Aroclors), pesticides, TAL metals, and cyanide. The proposed soil samples that are within the boundary of the landfill (interior

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samples) are in landfill material (SS-177 through SS-183). The proposed analyses for these interior samples include full TCL/TAL parameters and SVOCs by SIM.

~~Sample analyses for SS-173 and SS-174 will be held as contingent samples until results from SD-48 and SD-49 have been reviewed. If results from SD-48 and SD-49 indicate a connection to the landfill, SS-173 and SS-174 will be analyzed to further evaluate this connection.~~

2.2 Sediment Sampling

2.2.1 Sediment Sample Locations

The proposed sediment sampling locations (locations SD-45 through SD-69) are shown on Figures 3a and 3b, and are summarized in Table 1. The order of sampling will be from downstream to upstream locations. The position of sample locations may be adjusted based on accessibility or on other information gathered during field activities. If locations need to be relocated more than 10 feet from the proposed location, a Field Change Request will be submitted to USEPA for approval prior to sampling.

2.2.2 Sediment Sampling Procedures

Sediment samples will be collected in accordance with sampling procedures developed based on USEPA, USEPA ERT, and NJDEP sediment sample collection guidance documents (USEPA 1995, 1994; NJDEP 2005, 1998).

Sediment samples will be collected by advancing a dedicated Lexan® coring device or stainless steel Macrocore® sampler equipped with a dedicated acetate liner to a minimum of 1 foot beneath the surface water/sediment interface. One of these sampling methods will be selected based on site conditions at the time of sample collection. Each sediment core will be field screened with a PID. PID readings, descriptions of the sediment's physical characteristics, and other relevant visual observations will be recorded in a field log book. Sediment samples will be collected from the 0.0 to 1.0 foot bgs and 1.0 to 2.0 foot bgs. At sample locations where VOC analysis will be conducted ~~(i.e., SD-61 and SD-62)~~, a sample for VOC analysis will be collected from the lower 6-inches within each of these intervals ~~0.5 to 1.0-foot interval~~ in accordance with NJDEP (1998). The remaining s~~S~~ediment ~~in~~ from the 0.0 to 1.0 and 1.0 to 2.0 ~~0.5~~ foot interval~~s~~ will then be homogenized and transferred directly into laboratory-supplied containers for other analytical parameters. Field personnel will

document, label, package and ship sediment samples in accordance with procedures provided in Worksheet #21 of the QAPP (ARCADIS 2014b).

The locations of all sediment samples will be surveyed by a New Jersey licenses land surveyor.

2.2.3 Sediment Sample Analysis

Sediment samples will be analyzed for the COCs outlined in Table 1. All of the proposed sediment samples are off the boundary of the landfill in native sediment. ~~Since the purpose of these samples is to delineate the extent of COCs detected during implementation of the Data Gaps SAP, and the prior sampling (including the Data Gaps SAP and other sampling discussed in the Site Characterization Summary Report) at the site,~~ the proposed analyses for sediment samples include TCL SVOCs, SVOCs by SIM, PCBs (as Aroclors), pesticides, TAL metals and cyanide. Sediment samples SD-61 and SD-62 (NJDEP samples 16 and 17, respectively) will be analyzed for full TCL/TAL parameters and SVOCs by SIM. VOCs are included in these two samples in order to delineate VOCs detected in soil samples SS-109 and POI-3. All sediment samples will also be analyzed for pH, total organic carbon, and grain size.

~~Sample analysis for SD-50 will be held as a contingent sample until results from SD-49 have been reviewed. If results from SD-49 indicate a connection to the landfill, SD-50 will be analyzed to further evaluate this connection.~~

2.3 Analytical Procedures

All analyses will be performed by TestAmerica Laboratories, Inc. (TestAmerica) using current USEPA methods. TestAmerica is a current participant in the Contract Laboratory Program (CLP). The analytical procedures are included in Table 1. Additional information on TestAmerica and the analytical procedures is provided in the QAPP (ARCADIS 2014b).

3. Schedule

Implementation of the proposed soil and sediment sampling program will begin within 2 weeks after USEPA's approval of this Addendum 1 to the SAP and Addendum 1 of the QAPP. Sample collection will require approximately 4 weeks, and sample analyses will be completed 4 weeks after collection of the last sample. Data validation will require an additional 4 weeks after analysis of the last sample. Therefore, the total time to implement this work after USEPA approval is 12 weeks. If field conditions or other factors require changes to sample locations or methods, and/or if Field Change Requests must be submitted to and approved by USEPA, the schedule will be adjusted accordingly. The schedule for submittal of the final report will depend on the completion of this sampling and other tasks (monitoring well installation and sampling) which are not part of this addendum. The Group will compress this schedule if sampling, laboratory analysis, and/or data validation can be completed in less time than anticipated.

4. Project Management

4.1 Staffing

Implementation of Data Gap SAP activities will require integration of personnel from various organizations, collectively referred to as the "Project Team." Responsibilities of each member of the project team are presented in the QAPP (ARCADIS 2014b).

A list of key project management personnel is provided below.

Company/Organization	Title	Name	Phone Number
USEPA	Remedial Project Manager	Tanya Mitchell	212-637-4362
USEPA	QA Manager	TBD	TBD
NJDEP	Case Manager	Jill McKenzie	609-292-1993
The Group	Primary Contact	Gary Fisher	908-582-5771
~~Independent Consultant~~	~~Project Officer~~	~~John Persico~~	~~609-903-6227~~
ARCADIS	Project Manager	Suzanne Walls	865-777-3502
ARCADIS	QA Manager	Dennis Capria	315-446-2570

TBD – To be determined

4.2 Coordination

Personnel performing RI/FS Work Plan activities will be directed by representatives of the Project Team. A project organizational chart is provided as Figure 4.

5. References

ARCADIS U.S., Inc. 2012. Site Characterization Summary Report.

ARCADIS U.S., Inc. 2014a. Data Gaps Sampling and Analysis Plan. November.

ARCADIS U.S., Inc. 2014b. Quality Assurance Project Plan. December.

New Jersey Department of Environmental Protection. 1998. Guidance for Sediment Quality Evaluations.

New Jersey Department of Environmental Protection. 2005. Field Sampling Procedures Manual.

USEPA. 1995. *Superfund Program Representative Sampling Guidance; Volume 5: Water and Sediment; Part 1 – Surface Water and Sediment*. Office of Emergency and Remedial Response, Office of Solid Waste and Emergency Response.

USEPA. 1994. *Sediment Sampling - SOP #: 2016*. Emergency Response Team.